

Friday, February 05, 2016 8:25:47 AM

Page 1

Stop ***NR2***

[illegible]

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date :	Step #:	QTY Effective :		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Work Order ID 141566

Friday, February 05, 2016 8:25:47 AM

141566

Page 2

Item ID: D412-711-101

Accept

N900040100Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Replacement Vertical Reference Window

Start Date: 1/28/2016 Start Qty: 3.00

3

Cust Item ID:

Required Date: 2/3/2016 Req'd Qty: 3.00

3

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130		0.00							DAS 07 9-89
130	THERMOFORMING MACHINE					x2			16/04/05
Thermoform	Memo	0.03							
Thermoforming Machine	Thermoform as per Dwg. D412-711-101 using DT 9640 and Folio FTA 077								
	Dwg. Rev. <u>B</u>								
	Folio Rev. <u>C</u>								
	Visually inspect for proper formation and clarity								
	Visually and inspect magic eye								
	Verified by: <u>Sh</u>								
160		0.00							DAS 07 9-89
160	HAND FINISHING THERMOFORMING								16/04/18 ^{ole}
HandThermo	Memo	0.06							
Hand Finishing Thermoforming	1) Trim off excess flange material 2) Buff out any light scratches or 3) Etch part number and batch number								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐	OTHER : ☐			

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : ☐					

Work Order ID 141566

Friday, February 05, 2016 8:25:47 AM

141566

Page 4

Item ID: D412-711-101

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Replacement Vertical Reference Window

Stop ***NS2***Start Date: 1/28/2016 Start Qty: 3.00 ***3***

Cust Item ID:

Required Date: 2/3/2016 Req'd Qty: 3.00 ***3***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	Identify as per dwg & Stock Location: _____	0.00							
100									
Packaging	Memo	IX PPP 143							
Packaging	Location : FG099	IX Sold							
200	QC21- Final Inspection - Work Order Release	0.00							
200									
QC	Memo	0.00							
Quality Control									

APR 18 2016

MCS

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : ☐					

Picklist Print

Friday, February 05, 2016 8:25:50 AM

Page 1

Work Order ID: 141566

141566

Parent Item: D412-711-101

D412-711-101

Parent Item Name: Replacement Vertical Reference Window

Start Date: 1/28/2016

Required Date: 2/3/2016

Start Qty: 3.00

Required Qty: 3.00

Comments: IPP Rev:A New Issue 06-02-01 JLM
Manufacture in-house 10/06/28 DL

IPP Rev. B.

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
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MACRLICS.236

Purchased

No

sf

181.1833

64

MACRI ICS 236

Plexiglass G 0.236"

Location

Loc Qty

Loc Code

MAT

10.66

M133439

10.66

therm

170.5233333

M132743

106.523333

~~M134103~~

64

134201

Wh
16/04/18

42.66sq ft

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☒ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : <u>16/4/15</u>	Step #: <u>130</u>	QTY Effective : <u>2</u>		MRB (QSI042) Approval DAS 12 9-89 <u>16/4/15</u>	
Description Work Order Deviation		Disposition		Completed By DAS 07 9-89 <u>16/04/18</u> Lead hand / Supervisor Approval Verification DAS 9 9-89 <u>16-04-13</u> QC / QA Coordinator Approval DAS 9 9-89 <u>16-04-13</u>	
Based on testing of windows made from 0.177" mat'l, acceptable minimum wall thickness is: 0.076" @ 5" height for end face 0.052" @ 5" height for other faces 0.065" @ 8" height end face 0.046" @ 8" height for other faces 0.043" @ top / center		All windows that meet skid min. thickness are acceptable. Ref attached email			
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☒ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ ☒ Drawing Finish ☐ Misread ☐ Turning Sequence ☐
		OTHER : _____			

DART AEROSPACE LTD	Work Order: 141566
Description:	Part Number: D412-711-(01) #2.
Inspection Dwg: 412-711-101 Rev: B (UNDER REVIEW)	Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST
THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than <u>N/A</u> "				
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			
DAS				
Measured by:	07 9-89	Date: 16/04/05		

TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
LEADING @ 5" 0.076"	MIN	0.078"	✓			
TOP @ 5" 0.052"	"	0.134"	✓			
AFT @ 5" 0.052"	"	0.117"	✓			
BOTT @ 5" 0.052"	"	0.110"	✓			
LEAD @ 5" 0.065"	"	0.107"	✓			
TOP @ 8" 0.046"	"	0.113"	✓			
AFT @ 8" 0.046"	"	0.105"	✓			
BOTT @ 8" 0.046"	"	0.108"	✓			
APEX 0.043"	"	0.062"	✓			
BOTT FLANGE 2.00"	"	2.00"	✓			
SIDES - 1.5"	"	1.6"	✓			
DEPTH - 15.00	± 0.50"	15.25"	✓			
DAS						
Measured by:	07 DAS 9-89	Date: 16/04/18				
Audited by:	9 9-89	Date: 16-04-18				
Preliminary Approval:		Date:				

Rev	Date	Change	Revised by	Approved
B	10.04.14	Added preliminary approval	KJ	

DART AEROSPACE LTD	Work Order:	141566
Description:	Part Number:	D412-711-101 #1
Inspection Dwg: 412-711-101 Rev: B (UNDER REVIEW)		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Inside Radii less than <u>N/A</u>				
Shape Definition	✓			
Texture Retention	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by:	DAS 07 9-89	Date:	16/04/05
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TRIMMING SECTION

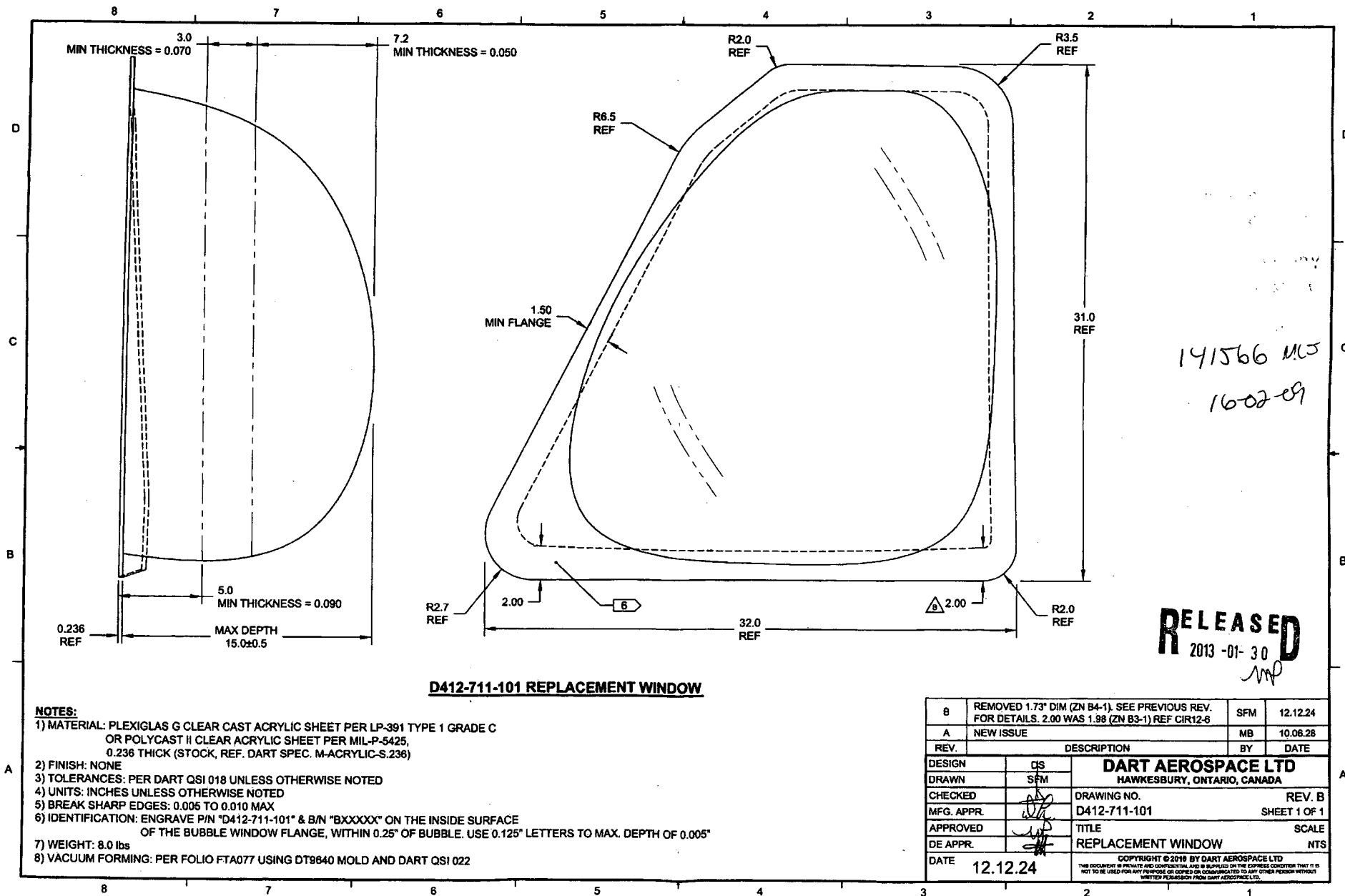
Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
LEAD @ 5" 0.076"	MIN	0.084"	✓			
TOP @ 5" 0.052"	"	0.143"	✓			
AFT @ 5" 0.052"	"	0.124"	✓			
BOTT @ 5" 0.052"	"	0.113"	✓			
LEAD @ 8" 0.065"	"	0.077"	✓			
TOP @ 8" 0.046"	"	0.119"	✓			
AFT @ 8" 0.046"	"	0.115"	✓			
BOTT @ 8" 0.046"	"	0.097"	✓			
APEX 0.043"	"	0.069"	✓			
BOTT FLANGE 2.00"	"	2.10"	✓			
SIDES 1.5"	"	1.55"	✓			
DEPTH - 15.00	± 0.50"	15.25"	✓			

Measured by:	DAS 07 9-89	Date:	16/04/10
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Audited by:	DAS 9 9-89	Date:	16-04-13
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Preliminary Approval:		Date:	
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Rev	Date	Change	Revised by	Approved
B	10.04.14	Added preliminary approval	KJ	



Chris Provencal

From: David Shepherd
Sent: Thursday, April 14, 2016 4:31 PM
To: Chris Provencal; William Monterroza
Cc: Patrick Smith
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Chris,

Thanks for completing the test. As discussed, my only request is that you add the minimum thicknesses listed below to the CIR and get Pat to re-sign. I am OK with you using the results of the test to approve deviations to windows that have just been manufactured so that we can make immediate deliveries to customers. Please try to have the updated TR and drawing to me sometime next week so that this doesn't fall through the cracks.

Regards,
David

From: Chris Provencal
Sent: April-14-16 2:10 PM
To: William Monterroza <wmonterroza@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

David,

Further, the min thickness on the tested part, D412-711-101 B144271 was:

0.052" @ 5" height on bottom face (dwg = 0.090")
0.076" @ 5" height on fwd face (dwg = 0.090")

0.046" @ 8" height on bottom face (dwg = 0.070")
0.065" @ 8" height on fwd face (dwg = 0.070")

0.043" @ on top/center (dwg = 0.050")

Chris

From: William Monterroza
Sent: Thursday, April 14, 2016 3:57 PM
To: Chris Provencal <cprovencal@dartaero.com>; David Shepherd <dshepherd@dartaero.com>
Cc: Patrick Smith <psmith@dartaero.com>
Subject: RE: Message from DART Aerospace Engineering Bizhub C454

Good work gentlemen. Thanks for the great effort.

As per David's comments earlier, once David reviews the data and the CIR, we can release the ones Daryl made out of the 0.233" material ahead of the documentation and reports. We will go ahead then and update the drawing to reflect the new minimum thickness as measured on the 0.177" window. What was that dimension by the way. It'd be interesting to know how thin that got with the 0.177" material.